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# Multidimensional Dichotomous Thinking Characterizes Borderline Personality Disorder

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*This study investigated whether dichotomous thinking is characteristic of borderline personality disorder (BPD). Patients with BPD (N = 16), control patients with Cluster-C personality disorder (PD; N = 12), and normal controls (N = 15) evaluated personalities from film clips in a structured response format. Film clips were presented with emotional themes, which were hypothesized to be either specific or nonspecific for borderline pathology, and with neutral themes. Dichotomous thinking was operationalized as the extremity of evaluations on a list of visual analogue scales (VASs) with bipolar trait descriptions. Patients with BPD made more extreme evaluations (dichotomous thinking) on BPD-specific film clips, but not on control film clips, than subjects of both control groups. The extreme evaluations of patients with BPD were not either ''all good'' or ''all bad,'' which indicates that patients with BPD do not engage in unidimensional good–bad thinking (splitting), but are capable of viewing others in mixed, although extreme, terms (multidimensional dichotomous thinking).*

**KEY WORDS:** borderline personality disorder; dichotomous thinking; splitting; cognitive theory.

Cognitive and psychoanalytic theories hypothesize that somewhat similar processes are characteristic of borderline personality disorder (BPD): dichotomous thinking and splitting. According to Beck's cognitive theory, *dichotomous thinking* refers to the tendency to evaluate experiences in terms of mutually exclusive categories rather than to see experiences as falling along continua. According to the cognitive view, extreme evaluations of situations lead to extreme emotional responses and extreme actions (Beck, Freeman, & Associates, 1990). Dichotomous thinking is sometimes hypothesized to be the result of schemata that borderline patients developed in early life (Layden, Newman, Freeman, & Byers Morse, 1993), but also may not be directly related to these schemata (Arntz, 1994).

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Three basic schemata are assumed to play a central role in BPD. These can be summarized by the following assumptions: ''The world is (i.e., others are) dangerous and malevolent,'' ''I am powerless and vulnerable,'' and ''I am inherently bad and unacceptable'' (Beck et al., 1990). According to Arntz (1994), traumatic experiences during childhood involving intimates lead to the development of the schemata of borderline patients. In line with this hypothesis, a recent study demonstrated that a set of specific assumptions mediated, in a statistical sense, the relationship between self-reported sexual, emotional, and physical abuse and BPD pathology (Arntz, Dietzel, & Dreessen, 1999). So far, the issue of whether dichotomous thinking by borderline patients is restricted to schema-specific stimuli has not been investigated.

In theory, dichotomous thinking can be a unidimensional or a multidimensional process. *Unidimensional* dichotomous thinking, in this article, is defined as making extreme evaluations with the same valence on the positive–negative dimension: All evaluations are either good or bad (e.g., another person is evaluated as ''all good'' or ''all bad''). *Multidimensional* dichotomous thinking is defined as making extreme evaluations with different valences on the positive–negative dimension. In this case, a person can be simultaneously evaluated as ''totally reliable'' and ''totally lacking self-confidence'' and is therefore not seen as ''all good'' or ''all bad.'' The unidimensional vs. multidimensional concept is used throughout this article. Cognitive theories on dichotomous thinking in BPD do not address whether this thinking style is uni- or multidimensional.

According to psychoanalytic theory, *splitting* is hypothesized to be a characteristic of the *borderline personality organization,* a broader concept than BPD that includes BPD. According to Kernberg's psychoanalytic theory of object relations, splitting is a primitive defense mechanism characteristic of pre-oedipal pathology. Kernberg (1976) explained splitting in terms of the child's inability to form complex representations that do not fit a good–bad dichotomy. According to Kernberg, the child's development involves the progressive separation of early affects and cognitions into libidinal and aggressive, positive and negative, components, as a consequence of experiences of gratification and frustration with the object world. Kernberg theorized that these normal processes of differentiation stall and eventually collapse. Confronted by painful interactions with his or her objects, the child tries to reclaim his or her libidinal investment in them. At the same time, the child's unmet, but overwhelming, dependency requires protection of the remaining part of his or her investment from the aggressive components of those object relations. The pre-oedipal child uses splitting as a defense against the destruction of good self and object representations by aggressive impulses. As a consequence, good and bad representations, both of the self and of the objects, continue to exist in relatively isolated states. This defensive division of the ego, which was at first a simple defect in integration, is then used actively for other purposes (Kernberg, 1966, 1967; Kernberg, Selzer, Koenigsberg, Carr, & Appelbaum, 1989). Splitting can be viewed as unidimensional: All feelings about and evaluations of an object are either good or bad. As Kernberg (1967) states, ''Probably the best known manifestation of splitting is the division of external objects into 'all good' ones and 'all bad'

ones, with the concomitant possibility of complete abrupt shifts of an object from one extreme compartment to the other: that is, sudden and complete reversals of *all* feelings and conceptualisations about a particular person'' (pp. 667-668), and as Baker, Silk, Westen, Nigg, and Lohr (1992) conclude, ''. . . borderlines, particularly when in crisis, are thought to view others in simplistic, *unidimensional* terms, as either emotionally and narcistically gratifying ('good') or rejecting and unavailable ('bad')'' (p. 258; italics added by present authors).

The obvious similarity between the two processes, dichotomous thinking and splitting, is that they both refer to the tendency to evaluate the self and the social world in extremes (black/white) in cases of borderline-specific emotional situations, whereas in cases of nonspecific or neutral situations, borderline patients may be capable of viewing the self and others in shades of gray. Although dichotomous thinking and splitting are apparently similar, there are some differences between them. First, according to cognitive theory, dichotomous thinking is an information-processing characteristic, possibly related to the basic schemata that borderline patients developed early in life. As such, this type of thinking does not have any defensive function. According to psychoanalytic theory, splitting is a pre-oedipal defense mechanism that protects the subject from the destruction of good self and good other representations by aggressive impulses. Second, dichotomous thinking does not exclude multidimensional thinking: It is conceivable that black or white thinking is multidimensional (i.e., extreme evaluations have different valences on the positive–negative dimension). Splitting, however, is hypothesized to be unidimensional (i.e., all evaluations have the same valence on the positive–negative dimension: ''all good'' vs. ''all bad'').

In Piaget's terms, dichotomous thinking and splitting can be viewed as ''centering'' and ''inability to seriate,'' characteristic of the preoperational stage in children (Layden et al., 1993; Piaget, 1952). ''Centering'' refers to the tendency of children to focus on only one aspect or dimension of an object or event at a time. They are unable to deal with two or more simultaneously changing or interacting characteristics, and they are unable to see the reciprocal relationship between more dimensions. ''Inability to seriate'' refers to the few, if any, stepwise shadings or gradations children make in this stage on one dimension (e.g., ''all dumb'' vs. ''all smart''; Harter, 1977).

Harter (1977, 1986) and Harter and Buddin (1987) elaborated on Piaget's theory by presenting a five-stage progression in cognitive emotional development on the basis of two dimensions: ''valence'' and ''target.'' In the first stage ($\pm$4 to 6 years), the child thinks that two or more evaluations can be made only in temporal order. In the second stage ($\pm$6 to 8 years), the child thinks that evaluations of the same valence can be simultaneously made only toward the same target. In the third stage ($\pm$8 to 9 years), the child can acknowledge that evaluations of the same valence are also possible toward different targets. In the fourth stage ($\pm$9 to 11 years), the child thinks that evaluations of different valence can coincide, but only with respect to different targets. Finally, in the last stage ($\pm$11 to 13 years), the child acknowledges that evaluations with a different valence can be made toward the same target. In this last stage, children

think they can simultaneously make two or more evaluations with different affect-valence toward the same person (Harter & Buddin, 1987).

Harter investigated children's views on these processes and not the direct experience of different emotions and evaluations. Conceptual understanding and experience of different emotions will not necessarily develop synchronously. For example, a child may simultaneously experience two emotions of different valence but not be able to reconstruct such an occurrence in a cognitively convincing manner. Whitesell and Harter (1989) demonstrated that although children learn to simultaneously acknowledge two or more emotions, they still may have difficulties in seriating—that is, they still tend to report their emotions in an all-or-nothing fashion–which prohibits a conceptual understanding. This phenomenon declines in late adolescence. According to Fischer's theory, two single evaluations that may cause a conflict (e.g., ''cheerful'' vs. ''depressed'') are then integrated into a higher order abstraction (such as ''moody''), which thereby reduces the apparent contradiction (Fischer, 1980; Harter, 1986; Whitesell & Harter, 1989). In other words, adolescents learn to make nuanced evaluations by integrating extreme evaluations with opposite valence. The evaluations made in Stage 5 are multidimensional: Evaluations with different valences are made toward one person. The unidimensional form of dichotomous thinking (''all good''–''all bad'' thinking style), as suggested by some psychoanalytic writers, would correspond to Stages 1 to 4 of Harter's theory of cognitive emotional development. The multidimensional form would correspond to Stage 5 of Harter's theory.

Previous research on object relations, thinking styles, and defense mechanisms have initially focused on Rorschach responses (Blatt, Brenneis, & Schimek, 1976; Lerner & St. Peter, 1984; Stuart et al., 1990). Later research was done with projective material of the Thematic Apperception Test (TAT), and other narrative data types (Nigg, Lohr, Westen, Gold, & Silk, 1992; Segal, Westen, Lohr, & Silk, 1993; Segal, Westen, Lohr, Silk, & Cohen, 1992; Westen, 1990, 1991a, 1991b; Westen, Lohr, Silk, Gold, & Kerber, 1990; Westen, Ludolph, Block, Wixom, & Wiss, 1990; Westen, Ludolph, Lerner, Ruffins, & Wiss, 1990; Westen, Ludolph, Silk, Kellam, Gold, & Lohr, 1990). These studies support the following two conclusions: (1) Borderline patients express more malevolent representations of others than those expressed by depressive, psychotic, and normal comparison groups, and (2) borderline patients are able to make complex attributions of intention, which are, on a measure of cognitive-development level, significantly more advanced than the complexity of the attributions of the comparison groups. According to Westen (1991b), these findings are not easily reconciled with the assumption of object relations theories that the borderline pathology lies between psychosis and neurosis on a continuum of development and pathology. Neither of the two dimensions that distinguished borderline patients from other patients can be explained as a regression to, or a fixation at, a pre-oedipal level of functioning. According to Westen (1991b), malevolence does not characterize the object world of interpersonal expectations of the normal pre-oedipal child, and the complex attributions produced by borderline subjects are cognitively far advanced relative to anything a toddler could produce. Additional research

was done on the relation between splitting and malevolence in borderline patients' ratings of their parents (Baker et al., 1992). The results provide strong evidence of malevolence but little evidence of splitting. The authors concluded that borderline patients possess the ability to see people in complex, rather than unidimensional, ways.

In general, several conclusions can be drawn. First, previous studies have dealt with object relations of borderline patients in general and not with dichotomous thinking specifically. Five dimensions were measured in these studies: complexity of representations of people, affect-tone of relationship paradigms, capacity for emotional investment in relationships and moral standards, understanding of social causality, and episode integration. The extremity of evaluations, as such, was not measured. Second, no distinction was made between specific and nonspecific stimuli because these studies used projective materials expected to trigger characteristic borderline thinking. Third, no clear distinction was made between unidimensional and multidimensional extreme thinking.

The present study investigated dichotomous thinking in BPD. Patients with BPD were compared with psychiatric controls (Cluster-C personality disorder [PD]) and subjects without psychopathology in their evaluations of personalities on short film fragments. Patients with PD were chosen as the psychiatric control group to exclude the possibility that dichotomous thinking is characteristic of PDs in general, instead of specific for BPD. Cluster-C was chosen because of minimal overlap with BPD. Cluster-B PDs, such as narcissistic and histrionic PDs, have more overlap with BPD. A comparison with other Cluster-B PDs seemed therefore to be premature at this phase of investigating dichotomous thinking in BPD. The following questions were examined:

1) *Do borderline patients show more dichotomous thinking than normal subjects and than patients with fairly unrelated PDs?* Borderline patients were compared with normal controls and patients with Cluster-C PDs.

2) *Is dichotomous thinking a specific (schema-related) or a general mechanism (i.e., does dichotomous thinking occur only in interpersonal situations specifically related to borderline pathology, or does it occur in all interpersonal situations)?* We hypothesized that interpersonal situations specifically related to BPD schemata are *abandonment, rejection,* and *abuse* (especially sexual and emotional abuse) of a relatively helpless victim by a malevolent other in the context of an intimate relationship (such as between intimate partners or between a child and a parent). Nonintimate problems between people, such as a business disagreement, and nonemotional interpersonal situations were hypothesized to be nonspecific. In the context of specific interpersonal situations, we distinguished four roles: victim, perpetrator, good (someone who protects, helps, and validates the victim), and ambivalent (having both ''victim'' and ''perpetrator'' characteristics). We could therefore test whether dichotomous thinking by patients with BPD would apply to each of these four roles.

3) *Do borderline patients, more than control groups, see their social world as ''all good'' or ''all bad''? Or, even when their judgments are extreme, do they judge other people as both good and bad?*

# METHOD

## Subjects

Patients were recruited from two Dutch psychiatric hospitals: Vijverdal in Maastricht and De Grote Beek in Eindhoven. To be considered for inclusion in the study, subjects had to meet the *Diagnostic and Statistical Manual of Mental Disorders* (3rd Rev. ed. [DSM-III-R]; American Psychiatric Association, 1987) criteria for BPD or one of the Cluster-C PDs (i.e., avoidant, dependent, obsessive–compulsive, and passive–aggressive PDs). Exclusion criteria for subjects included chronic psychotic disorders, acute psychotic episodes (subjects with psychotic episodes in remission were not excluded), and mental retardation. Patients were admitted to the BPD group when they met the criteria for BPD and to the Cluster-C group when they met the criteria for at least one of the PDs of Cluster-C and no criteria for BPD. Normal comparison subjects were obtained by advertising. Subjects were administered a semistructured telephone interview (short version of the Structured Clinical Interview for DSM-III-R Axis I Disorders [SCID-I]), to exclude subjects with Axis I disorders. Subjects who passed the telephone screening were administered the SCID-II (for Axis II disorders). Exclusion criteria for normal subjects were Axis I and Axis II disorders and any criterion of BPD.

Table I presents the demographic variables for the three groups. The groups differed significantly on two demographic variables. In the BPD group, a higher percentage of the subjects did not live with a partner, Kruskal–Wallis: $\chi^2$ (2, $N$ = 43) = 7.89, $p < .05$, and a higher percentage reported a psychotrauma in their youth (chronic sexual abuse and/or violent behavior by relatives before puberty), Kruskal–Wallis: $\chi^2(2, N = 43) = 10.17$, $p < .05$, compared with the other two groups. Most of the further analyses were not corrected for these two variables because it was reasoned that they were inherent BPD characteristics.

Table II presents the distribution of Axis I and Axis II disorders in the patient groups. The total number of Axis I disorders per patient did not differ significantly between the clinical groups, Mann–Whitney: $z(26) = .10$, n.s., nor did the specific

**Table I.** Demographic Variables for Each Group

| Demographic variable | Group | | |
|---|---|---|---|
| | BPD ($N$ = 16) | Cluster-C ($N$ = 12) | Normal ($N$ = 15) |
| Age ($X$ + $SD$) | 27.0 ± 5.1 | 32.1 ± 6.6 | 28.1 ± 7.0 |
| % Female ($N$) | 75 (12) | 58.3 (7) | 73.3 (11) |
| % Married/cohabiting ($N$)[a] | 0 (0) | 17 (2) | 40 (6) |
| Education | | | |
| % Lower general level ($N$) | 25 (4) | 8.3 (1) | 20 (3) |
| % Middle level ($N$) | 43.8 (7) | 33.3 (4) | 13.3 (2) |
| % Higher/university level ($N$) | 31.3 (5) | 58.3 (7) | 66.7 (10) |
| % Traumas before puberty ($N$)[a] | 50 (8) | 25 (4) | 0 (0) |

*Note:* Trauma was assessed with the SCID-I PTSD section and may be underestimated given the high threshold of the opening question of this section. All traumas reported here were chronic sexual abuse and/or violent behavior by relatives.
[a]$p < .05$.

**Table II.** Number of Axis I and Axis II Disorders in Patients with BPD and Cluster-C PD

| | Axis I disorders | | | | Axis II disorbers | | | |
|---|---|---|---|---|---|---|---|---|
| Group | 0 | 1 | 2 | 3 | 1 | 2 | 3 | 4 |
| BPD ($N = 16$) | 0 | 8 | 6 | 2 | 4 | 4 | 5 | 3 |
| Cluster-C PD ($N = 12$) | 1 | 5 | 4 | 2 | 6 | 6 | 0 | 0 |

*Note:* In the BPD group, 11 patients were diagnosed with a mood disorder, 9 with an anxiety disorder, 4 with an eating disorder, and 2 with a psychotic disorder in remission. In the Cluster-C group, 9 patients were diagnosed with a mood disorder, 8 with an anxiety disorder, 1 with a somatization disorder, and 1 with an eating disorder. The BPD group did not differ significantly from the Cluster-C group on the number of mood disorders, Mann–Whitney: $z(26) = .36$, n.s.; anxiety disorders, Mann–Whitney: $z(26) = .55$, n.s.; somatization disorders, Mann–Whitney: $z(26) = 1.15$, n.s.; eating disorders, Mann–Whitney: $z(26) = 1.12$, n.s.; or psychotic disorders in remission, Mann–Whitney: $z(26) = 1.25$, n.s.

categories (see Table II Note). The total number of Axis II disorders per patient differed significantly between the clinical groups; the BPD group was diagnosed as having more Axis II disorders than those of the Cluster-C group, Mann–Whitney: $z(26) = 1.25$, $p < .05$. Because BPD and Cluster-C groups differed significantly as to the number of additional Axis II disorders, we investigated whether the number of additional Axis II disorders was a confounder (see the Results Section).

## Materials

A Dutch version of the SCID-II was used to diagnose the PDs (Psychiatrisch Centrum Bloemendaal, 1991). As used by our team, this version has proven to have good inter-rater reliability (average kappa = .80; range of kappas across all disorders: .65 to 1.00; Intraclass Correlation Coefficient (ICC) range across all disorders: .83 to .94; kappa for BPD = .79; ICC for BPD trait score = .91; Arntz, van Beijsterveldt, Hoekstra, Hofman, Eussen, & Sallaerts, 1992; test–retest ICC for trait score = .72; Dreessen & Arntz, 1998) and good factorial validity (Arntz, 1999). The Dutch version of the SCID-I was used to assess Axis I disorders; the section of the post-traumatic stress disorder (PTSD) was used to assess psychotrauma in early life (Arntz, Bögels, & Hoekstra, 1992; Koster van Groos, 1985). Reliability figures of the SCID-I are not available. Interviews were conducted by the first author, who had been extensively trained by interviewers who participated in our reliability studies of the SCID-II.

Six film clips, of about 10 min each, were presented. Four involved negative themes hypothesized to be specific for borderline pathology, one involved a negative theme hypothesized to be nonspecific for borderline pathology, and one involved a neutral theme. The order of presentation of the film clips was as follows: the specific clips, the neutral clip, then the nonspecific clip. It was not possible to plan exact sample sizes in advance, within the time span of the study. Therefore, film clips could not be balanced across the study. The neutral clip was presented after the specific clips so that a check on transfer of effects of specific clips was possible. The specific clips were taken from the following movies: *Best Intentions* (August

Bille), *Miles from Nowhere* (Buzz Kulik), *Something about Amelia* (Randa Haines), *Ordinary People* (Robert Redford). The nonspecific clip was taken from the film *Kane and Abel* (Buzz Kulik). The neutral clip was taken from the documentary *The Last Harvest Year* (Bert Haanstra). The themes of the specific clips were, respectively, relationship crises, threatening desertion of child, sexual abuse of child, and threatening rejection of child. These themes cover the assumed BPD-specific interpersonal situations of abandonment, rejection, and abuse in intimate relationships, thus hypothesized to trigger BPD schemata (see Arntz, 1994; Arntz et al., 1999; Beck et al., 1990). The theme of the nonspecific clip was a business disagreement and that of the neutral clip was farm life. These clips showed interpersonal interactions that were assumed not to be related to BPD schemata. To check whether the clips accurately portrayed these themes, two independent raters judged the clips regarding what, in their opinion, was the dominant theme, choosing from the six themes just mentioned; a free-response option was included. The inter-rater reliability was good (92% agreement; kappa = .81).

The film personalities in the specific clips could be divided into four BPD-schema-related roles: ambivalent, perpetrator, victim, and good. The *ambivalent* role represents film personalities who are not obviously ''perpetrator'' (abandoning or abusing the other person) or ''victim'' (the person being abandoned or abused). Both ambivalent roles were from the movie *Best Intentions* (August Bille) and were added to test whether dichotomous thinking would also be triggered by such ambiguous roles (schema theory would predict biased information processing of ambiguous stimuli). The *perpetrator* role represents film personalities who harm (abuse) another person. The *victim* role represents film personalities who are harmed by the perpetrator, as well as film personalities who are, in the figurative meaning of the word, victim of a situation. The *good* role represents film personalities who support the victim. The film personalities in the nonspecific and neutral film clips represented, respectively, a nonspecific (but emotionally negative) role and a neutral role. All personalities in the film clips were evaluated. To check whether the personalities were accurate representations of the different roles, two independent raters ascribed roles to the film personalities, using the aforementioned definitions of the roles, with a free-response option included. The inter-rater reliability was good (83% agreement; kappa = .72). Table III summarizes the film clips, including a brief description of their content.

A list with 22 visual analogue scales (VASs) with opposing character qualities, listed in random order, was used to allow subjects to evaluate the film personalities. Subjects were asked to evaluate each film personality on each VAS. Sixteen qualities with positive–negative polarity were included, hypothesized to be related to BPD-specific views of others and self (e.g., happy–unhappy, reliable–unreliable), and six neutral qualities were included that were hypothesized to be unrelated to BPD-specific views of others and self (e.g., passive–active, has global approach–enters into details). To check whether the qualities were accurately categorized as positive, negative, and neutral, two raters evaluated the qualities by dividing them into positive, negative, and neutral categories. The inter-rater reliability was good (92% agreement; kappa = .88).

Strength of emotional response was measured with seven VASs: six emotions

**Table III.** Themes, Roles, and Summary of Content of Film Clips

| Theme | Roles | Summary of content |
|---|---|---|
| 1. Relationship crises | Ambivalent (2 × A) | A man (A) and a woman (A) have an argument. The quarrel gradually becomes more personal. At the end they even wonder whether they should stay together and marry. |
| 2. Threatening desertion (dying child) | Good (G)<br>Victim (V) | A boy lies comatose in the hospital as a result of a car accident. The brother (V), who is a victim of the situation, feels very guilty, because it was his car. The father (G) is very caring and loving. |
| 3. Sexual abuse of child | Good/Victim<br>Perpetrator (P) | A girl (V) tells her mother (P), with the help of her teacher (G), about the sexual abuse by her father. The mother is very shocked and says that her daughter must be lying. The daughter feels rejected. |
| 4. Threatening rejection of a child | Good/Victim<br>Perpetrator | A mother (P) is being very unfair to her son (V) and does not show him any affection. The father (G) tries to solve the quarrel. He is very loving and caring toward his son. |
| 5. Business disagreement | Nonspecific (2 × NS) | Two men, a banker (NS) and a businessman (NS), have an argument about a loan. |
| 6. Farm life | Neutral (2 × N) | A farmer (N) and his wife (N) show their way of life. |

(happiness, sadness, fear, anger, surprise, restlessness) and valence (pleasant–unpleasant). Following each clip, subjects were asked to rate the intensity of their feelings during watching. The mean score on the happiness (reversed), sadness, anxiety, anger, surprise, and restlessness dimensions was used as an indication of the strength of negative emotional response (Cronbach's $\alpha$ ranged from .64 to .83 for the six scripts).

Dichotomous thinking scores were derived as follows. For each VAS, the absolute distance, in millimeters, was measured from the middle of the VAS to the rating (range: 0 to 50). For each VAS, this score gives an indication of the *extremity* of the evaluation, not influenced by the valence (positive vs. negative) of the evaluation. These 22 scores were averaged for each personality: Dichotomous thinking score = $(|VAS_1| + |VAS_2| + \cdots + |VAS_{22}|)/22$ (range: 0 to 50). This score approaches 50 when all evaluations are extreme, but not necessarily of the same valence. A score of 0 means that the evaluations are all at the middle of the VASs. A mean score was calculated for the personalities that belong to the same role, so that six dichotomous thinking scores resulted.

Unidimensional good–bad thinking scores (or splitting scores) were derived as follows. First, the neutral items were excluded from computation. Next, for each remaining VAS, the distance, in millimeters, as measured from the middle of the

VAS to the rating, was given a positive sign if the rating was to the positive pole and a negative sign if the rating was to the negative pole. For each VAS, this score gives an indication of the *valence* (good–bad) of the evaluation. A maximum score of +50 equals the most extreme positive evaluation of the character quality (e.g., totally reliable), and a minimum score of −50 equals the most extreme negative evaluation (e.g., totally unreliable). Unidimensional good–bad thinking (splitting) was expressed as the absolute value of the mean of these distances: Unidimensional good–bad thinking score = $|(VAS_1 + VAS_2 + \cdots + VAS_{16})|/16$ (range: 0 to 50). This score approaches 50 when splitting is maximal (i.e., when all evaluations are extreme *and* of the same valence [positive vs. negative]). A score of 0 denotes absence of splitting: On the average, positive and negative evaluations are equally strong. The score was calculated for each film personality separately, after which a mean score was calculated for the personalities that belong to the same role.

*Comparison of Dichotomous Thinking and Unidimensional Good–Bad Thinking Scores*

An example may clarify how the dichotomous thinking and unidimensional good–bad thinking scores were compared. Suppose we have two VASs, one with character poles *unreliable–reliable,* the other with poles *jealous–not jealous at all.* When a person is simultaneously evaluated as "totally reliable" (+50) and "totally jealous" (−50), the dichotomous thinking score is: $(|+50| + |-50|)/2 = 50$, and the unidimensional good–bad thinking score is $|[(+50) + (-50)]/2| = 0$. The unidimensional good–bad thinking score does not equal the dichotomous thinking score, which means that although the evaluations are extreme, they do not have the same valence; this indicates that the person is not evaluated as "all good" or "all bad." When, however, a person is simultaneously evaluated as "totally unreliable" (−50) and "totally jealous" (−50), the dichotomous thinking score is $(|-50| + |-50|)/2 = 50$, and the unidimensional good–bad thinking score is $|[(-50) + (-50)]/2| = 50$. In this case, the unidimensional good–bad thinking score equals the dichotomous thinking score, and both are high, which means that the evaluations on the VASs are directed at the same polarity. This indicates that the person is evaluated as "all good" or "all bad."

This approach was used to compare the dichotomous thinking score with the unidimensional good–bad thinking score. If the dichotomous thinking score equals the unidimensional good–bad thinking score, the evaluations on all VASs are directed at the same negative or positive polarity and are hypothesized to be the result of unidimensional good–bad thinking. If the dichotomous thinking score is much larger than the unidimensional good–bad thinking score, evaluations of the VASs are directed at both polarities (negative and positive) and are hypothesized to be the result of "*multidimensional*" dichotomous thinking. Because the neutral items cannot be divided along a positive–negative dimension, these items were not used in the direct comparison of unidimensional good–bad thinking and dichotomous thinking. Thus, only the 16 positive–negative items were used here.

## Procedure

At the start of the experiment, informed consent was obtained. There were two sessions for each subject. In the first session, the SCID-I and SCID-II were adminis-

tered by a member of the research team. In the second session, which took place within 1 week after the first session, film clips were presented with a videotape recorder. After each film clip, the subjects were asked to judge the character qualities of the film personalities by filling out a questionnaire, followed by another questionnaire on which subjects were asked to judge the strength of their emotional responses.

## RESULTS

### Manipulation Check

To check whether the film clips evoked the intended emotional response, we analyzed the mean emotion scores per fragment by analysis of variance (ANOVA) with Group as the between-subjects factor, and Film Fragment as the within-subjects factor. The ANOVA revealed a nonsignificant effect of Group, $F(2, 40) = 1.57$, $p > .20$; a significant effect of Film Fragment, $F(5, 200) = 17.44$, $p < .001$; and a significant Group $\times$ Film Fragment interaction, $F(10, 200) = 2.17$, $p < .05$. Planned contrasts (Dunnett *t*-tests procedure; SPSS Inc., 1997, p. 37) comparing the BPD group with the other two groups revealed that there were no significant differences between the BPD group and the other groups. The significant Group $\times$ Film Fragment interaction was related to the tendency of normal subjects to rate lower negative emotions in response to the specific fragments than both patient groups did, but Tukey post hoc tests failed to reach significance. The specific fragments, especially Fragment 3 (sexual abuse of a child), received higher negative emotion ratings than did the neutral fragment ($p < .01$), but the nonspecific fragment failed to evoke stronger negative emotions than those evoked by the neutral fragment. As a further check, valence ratings were analyzed. An ANOVA revealed a significant effect of Group, $F(2, 40) = 6.39$, $p < .01$; a significant effect of Film Fragment, $F(5, 200) = 7.52$, $p < .001$; and a nonsignificant Group $\times$ Film Fragment interaction, $F(10, 200) = 1.67$. Planned contrasts (Dunnett's *t*-test procedure) comparing the BPD group with the other two groups revealed that the BPD group gave significantly higher unpleasantness ratings to the first, second, and third film fragments (all specific) than those given by the normal controls. The patients with BPD did not differ from the patients with Cluster-C PD as to the valence ratings. The specific fragments, especially Fragment 3 (sexual abuse of a child), received higher negative valence ratings than did the neutral fragment ($p < .05$), but the nonspecific fragment failed to evoke stronger negative valence ratings than those evoked by the neutral fragment.

The following conclusions can be drawn. The specific clips, compared with the neutral clip, evoked the emotional responses that they were designed to elicit. The nonspecific clip, although hypothesized to be emotional, did not evoke a strong emotional response.

### Hypotheses

Data were analyzed by ANOVA, with Group as the between-subjects factor and Role as the within-subjects factor. Significant Group effects and Group $\times$ Role

interactions were further examined by Dunnett's *t*-test procedure, which tested the planned contrasts: BPD vs. Cluster-C and BPD vs. normal controls (SPSS Inc., 1997, p. 37). This multiple-comparisons procedure controls the significance level for multiple testing, but it is more powerful than various other procedures by testing only hypothesized comparisons. First, dichotomous thinking scores were compared across the groups. Second, unidimensional good–bad thinking scores were compared across the groups. In a third analysis, the dichotomous thinking scores (neutral items excluded) for the specific clips were compared, by means of a paired *t* test, with the unidimensional good–bad thinking scores (neutral items excluded) in order to test whether extreme scores represent unidimensional good–bad thinking. In light of the modest sample size and the explorative character of the study, $\alpha$ was set at .05 for all tests (one-tailed in case of planned contrasts). Experimentwise error was therefore higher than .05 and results should be interpreted cautiously.

Because BPD and Cluster-C groups differed significantly as to the number of additional Axis II disorders, we investigated whether the number of additional Axis II disorders was a confounder. The usual analysis of covariance (ANCOVA) approach, to correct for this nonequivalence, could not be used because the normal controls had, by definition, no PDs, so there was no variance in this cell. Therefore, the contribution of the number of additional PDs was covaried out by means of regression (the square root of the number of additional Axis II disorders was used so that the distribution was approximately normal). All dichotomous thinking scores and splitting scores were corrected for the contribution of additional Axis II disorders by using the residual scores in the ANOVA. By comparing results of the ANOVAs with the original scores and with the corrected scores, we tested whether additional Axis II pathology confounded the results.

### *Dichotomous Thinking*

*Original Scores.* An ANOVA, with Group as the between-subjects factor and Role as the within-subjects factor, on the averaged absolute scores yielded a significant effect of Group, $F(2, 40) = 3.71$, $p < .05$; a significant effect of Role, $F(5, 200) = 15.67$, $p < .001$; and a nonsignificant Group $\times$ Role interaction, $F(10, 200) = 1.49$. Greenhouse–Geisser corrections yielded essentially the same results. The Group effect was further examined by a Dunnett *t*-test procedure (SPSS Inc., 1997, p. 37), which tested the a priori hypothesis that the BPD group showed stronger dichotomous thinking for each role than did the other two groups. As predicted, the BPD group had higher dichotomous thinking scores for all specific roles than the other two groups had ($p$s $< .05$), except for the good role, for which only trends in the expected direction were observed ($p$s $< .08$). Contradicting the hypothesis, patients with BPD showed, or tended to show, stronger dichotomous thinking than normal subjects ($p < .05$) and patients with Cluster-C PD ($p < .07$) for the nonspecific roles. The difference between the BPD group and the other two groups failed to reach significance for the neutral roles. Thus, the specificity hypothesis was only partially supported when original scores were analyzed.

*Scores Corrected for Additional Axis II Disorders.* Figure 1 presents the mean dichotomous thinking scores, corrected for the contribution of number of additional Axis II disorders, of the three groups for the six roles. An ANOVA, with Group as

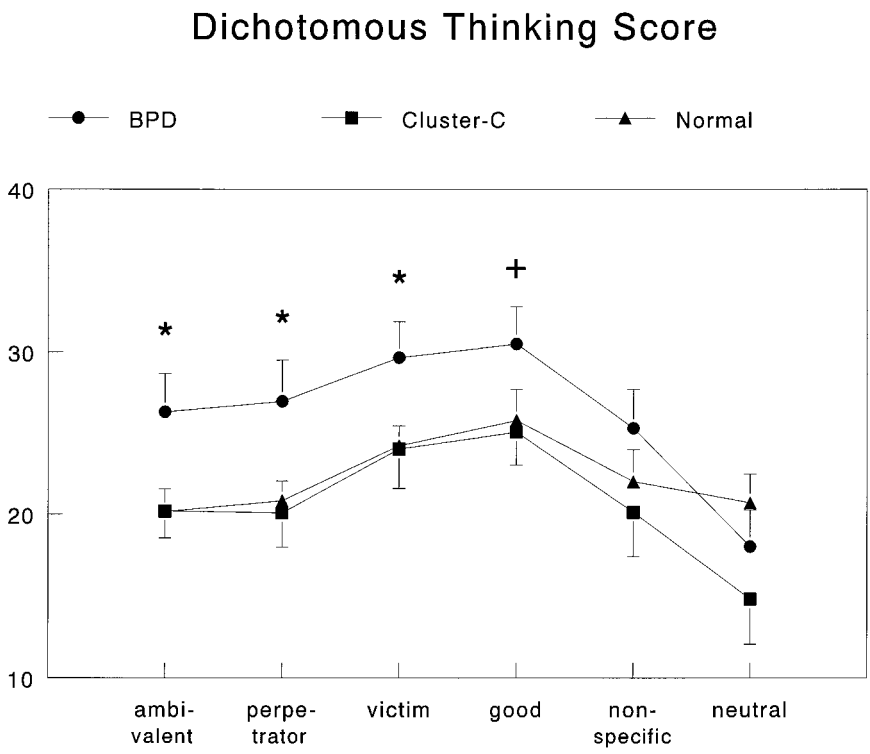


**Fig. 1.** Mean dichotomous thinking scores and standard errors of the three groups for the ambivalent, perpetrator, victim, good, nonspecific, and neutral roles, corrected for the number of additional Axis II disorders. *$p < .05$. †$p < .10$.

the between-subjects factor and Role as the within-subjects factor, on the corrected dichotomous thinking scores yielded a nonsignificant effect of Group, $F(2, 40) = 2.30, p > .10$; a significant effect of Role, $F(5, 200) = 23.99, p < .001$; and a significant Group × Role interaction, $F(10, 200) = 2.41, p < .01$. Greenhouse–Geisser corrections yielded essentially the same results. The Role × Group interaction was further examined by a Dunnett *t*-test procedure (SPSS Inc., 1997, p. 37), which tested the a priori hypothesis that the BPD group showed stronger dichotomous thinking for each role than did the other two groups. As predicted, the BPD group had higher dichotomous thinking scores for all specific roles than the other two groups had ($ps < .05$), but the difference failed to reach significance in the case of the good role ($ps < .10$). The differences between the BPD group and the other two groups failed to reach significance for the nonspecific and the neutral roles. Thus, the number of additional Axis II disorders appeared to confound the results for the nonspecific roles. After we corrected for the contribution of additional Axis II disorders, the differences between the BPD group and the two control groups for the nonspecific roles were no longer significant.

In summary the analyses confirm the hypothesis that dichotomous thinking occurs only in situations that are specifically negatively emotional for BPD.

*Unidimensional Good–Bad Thinking*

*Original Scores.* An ANOVA, with Group as the between-subjects factor and Role as the within-subjects factor, yielded a nonsignificant effect of Group, $F(2, 40) = 1.41$, n.s.; a significant effect of Role, $F(5, 200) = 21.98$, $p < .001$; and a significant Group × Role interaction, $F(10, 200) = 2.31$, $p < .05$. Greenhouse–Geisser corrections yielded essentially the same results. The Role × Group interaction was further examined by a Dunnett *t*-test procedure (SPSS Inc., 1997, p. 37), which tested the a priori hypothesis that the BPD group showed stronger unidimensional good–bad thinking for each role than did the other two groups. Only for the perpetrator role did the BPD group have higher unidimensional good–bad thinking scores than those of other two groups ($p$s $< .01$). For the other three specific roles, the BPD group had no significantly higher unidimensional good–bad thinking scores than those of the other two groups, although there was a trend toward significance in the expected direction as to the BPD–normals comparison in the case of the ambivalent role ($p = .062$). The differences between the BPD group and the other two groups failed to reach significance for the nonspecific and the neutral roles.

*Scores Corrected for Additional Axis II Disorders.* Figure 2 presents the mean

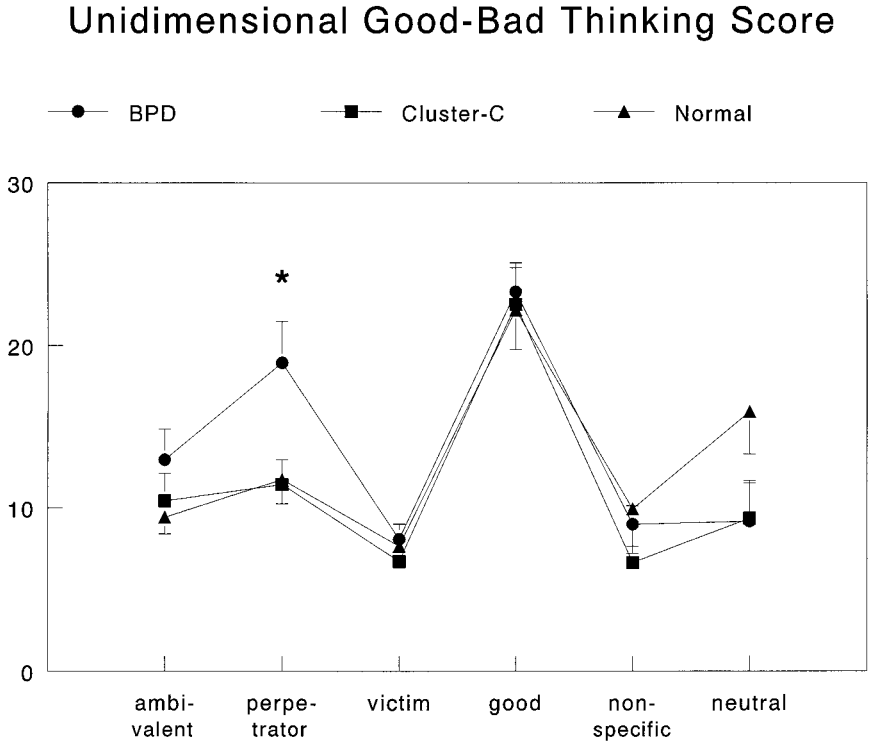


**Fig. 2.** Mean unidimensional good–bad thinking scores and standard errors of the three groups for the ambivalent, perpetrator, victim, good, nonspecific, and neutral roles, corrected for the number of additional Axis II disorders. *$p < .05$. †$p < .10$.

corrected unidimensional good–bad thinking scores for the six roles of the three groups. An ANOVA, with Group as the between-subjects factor and Role as the within-subjects factor, on the scores corrected for the number of additional Axis II disorders yielded a nonsignificant effect of Group, $F(2, 40) = 0.96$, n.s.; a significant effect of Role, $F(5, 200) = 32.61$, $p < .001$; and a significant Group × Role interaction, $F(10, 200) = 2.40$, $p < .05$. Greenhouse–Geisser corrections yielded essentially the same results. The Role × Group interaction was further examined by a Dunnett *t*-test procedure (SPSS Inc., 1997, p. 37), which tested the a priori hypothesis that the BPD group showed stronger unidimensional good–bad thinking for each role than did the other two groups. For three of the four specific roles, the BPD group had no higher unidimensional good–bad thinking scores than those of the other two groups. Only for the perpetrator role did the BPD group have higher unidimensional good–bad thinking scores than those of the other two groups ($p$s $< .05$). The differences between the BPD group and the other two groups failed to reach significance for the nonspecific and the neutral roles.

In summary, the results contradict the hypothesis that unidimensional good–bad thinking is specific for BPD, because no higher unidimensional good–bad thinking scores were found in the BPD group than in the control groups, except for the perpetrator role. The number of additional Axis II disorders was not a confounder.

### *Dichotomous Thinking vs. Unidimensional Good–Bad Thinking*

To further examine the difference in mean absolute score (dichotomous thinking) and mean nonabsolute score (unidimensional good–bad thinking), we conducted a paired *t* test within the BPD group, using scores for the specific roles (neutral qualities excluded). Figure 3 presents the mean dichotomous thinking scores vs. the mean unidimensional good–bad thinking scores for the four specific roles for the BPD group. The mean absolute scores were significantly higher than the mean nonabsolute scores in response to the specific roles, which indicated that the BPD group made extreme judgments about each personality on both the positive and the negative dimensions, $t(15)$s $> 5.25$, $p$s $< .0001$. We hypothesized that the evaluations made by the control groups would not be unidimensional; therefore, the mean absolute scores would not equal the nonabsolute scores. As expected, in the control groups, dichotomous thinking scores were significantly higher than unidimensional good–bad thinking scores, in response to the specific roles, $t$s $> 4.86$, $p < .0001$. In summary, these results demonstrate that the extreme evaluations made by the patients with BPD were not the result of unidimensional good–bad thinking.

### *Emotional Response*

To examine the possibility of a confounding effect of emotional response on the extremity of the evaluations, we added the emotional response scores as covariates in the analyses. For each specific role, a mean emotion score was calculated for the clips that contained the role. The ANCOVAs demonstrated no significant confounding effect of emotional response that can explain the extremity of evaluations for the specific roles: The differences between BPD and control groups remained the

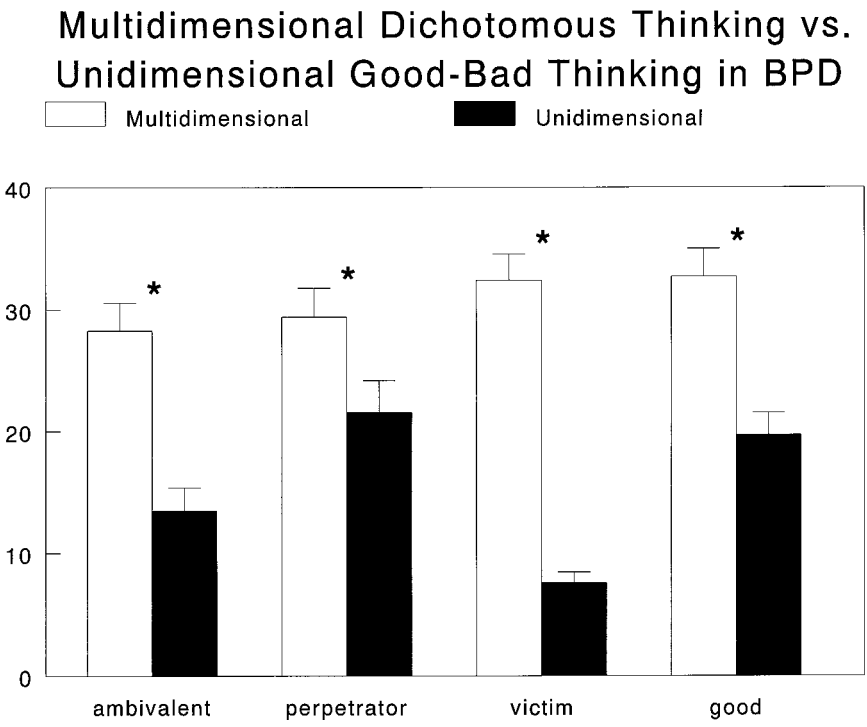


**Fig. 3.** Mean dichotomous thinking scores vs. mean unidimensional good–bad thinking scores for the four specific roles for the BPD group. All differences were significant, which implied that dichotomous thinking could not have resulted from unidimensional good–bad thinking (splitting). The neutral items were not used in this comparison. *$p < .05$.

same, and the covariates were nonsignificant (ambivalent: $\beta = .064$, $t(40) = .32$, n.s.; perpetrator: $\beta = .13$, $t(40) = .28$, n.s.; victim: $\beta = -.12$, $t(40) = -.26$, n.s.; good: $\beta = -.14$, $t(40) = -.29$, n.s.). The same held for dichotomous thinking scores corrected for additional Axis II pathology. To examine the relation between the strength of the emotional response and dichotomous thinking by borderline patients, we calculated correlations (Table IV). As can be seen, predominantly moderate

**Table IV.** Correlations Between the Strength of the Emotional Response and the Extremity of the Evaluations of Borderline Patients

| Emotional response | Role | | | | | |
|---|---|---|---|---|---|---|
| | Ambivalent | Perpetrator | Victim | Good | Nonspecific | Neutral |
| Not happy | .47 | .27 | .56[a] | .42 | .18 | .12 |
| Sadness | −.24 | −.12 | .06 | −.05 | .05 | −.29 |
| Anxiety | −.38 | −.26 | −.01 | −.18 | −.01 | −.22 |
| Anger | −.07 | −.20 | .04 | −.09 | −.11 | −.10 |
| Restlessness | .25 | .22 | .33 | .21 | .12 | −.09 |
| Total score | −.08 | −.06 | .19 | .01 | .08 | −.15 |
| Valence | .29 | .21 | .77[a] | .67[a] | −.16 | −.39 |

[a]$p < .01$.

correlations were found, which indicates that dichotomous thinking does not seem to be strongly related to the strength of (immediate) emotional responses. An exception to this finding is the valence score (global emotional evaluation), which seems to have a stronger relation with dichotomous thinking.

### *Depression*

To test whether depression, rather than BPD, was related to dichotomous thinking, we repeated the analyses with dichotomous thinking scores corrected for the presence vs. the absence of a major depressive episode as assessed with the SCID-I.[3] An ANCOVA approach could not be used because, by definition, none of the normal control subjects had this disorder. Corrected scores were therefore derived in the same way as the scores corrected for the number of additional Axis II disorders: The contribution of the presence of depression was covaried out by means of regression, and residual scores were used in the ANOVA. In the case of each of the six roles, depression was not significant as a predictor of dichotomous thinking, and the results of the ANOVA were equivalent to those using the original scores. The same held when scores first corrected for the contribution of additional Axis II pathology were used. Thus, the observed effects could not be attributed to depression.

### *Childhood Traumas*

To test whether childhood traumas, more than the BPD diagnosis, predicted dichotomous thinking or unidimensional good–bad thinking, we performed a series of regression analyses. Two predictors were entered: BPD diagnosis (yes/no) and childhood trauma (yes/no). First, the raw dichotomous thinking scores were analyzed. Childhood trauma was not a significant predictor of any of the six dichotomous thinking scores ($ps > .20$), whereas BPD had the same relationships with the dependent variables as those found with the ANOVAs reported previously. Childhood trauma was significantly correlated with the dichotomous thinking score for the perpetrator role ($r = 0.30$, $p = .05$), but this correlation was reduced when BPD status was statistically controlled for ($\beta = 0.13, p = .40$). Second, dichotomous thinking scores corrected for the number of additional Axis II disorders were analyzed. Childhood trauma, alone or in combination with the BPD diagnosis, was not a significant predictor of any of the six dichotomous thinking scores. The relationship of BPD with dichotomous thinking remained essentially the same when childhood trauma was entered in the regression equations. In a third series, the raw unidimensional good–bad thinking scores were analyzed. Again, childhood trauma was not a significant predictor. In the case of the perpetrator role, childhood trauma tended to be related to this score ($r = 0.28$, $p = .066$), but when it was entered in combination with the BPD diagnosis, the relationship vanished ($\beta = 0.078$, $p = .61$). Last, the corrected unidimensional good–bad thinking scores were analyzed, but childhood trauma, alone or in combination with the BPD diagnosis, was not a significant predictor. In sum, childhood trauma did not appear to be an

[3]Thanks are due to an anonymous reviewer for suggesting this possibility.

important predictor of dichotomous thinking and of unidimensional good–bad thinking. The BPD diagnosis appeared to be the essential predictor.

## DISCUSSION

To the best of the authors' knowledge, this is the first study that experimentally tested whether dichotomous thinking is characteristic of BPD. The following five conclusions can be drawn from the findings. First, patients with BPD showed more dichotomous thinking than patients with Cluster-C PD and normal controls: Evaluations by borderline patients were more extreme than those by the comparison groups. Second, dichotomous thinking seems to be a specific, not a general, mechanism. In the case of the neutral and the nonspecific negative stimuli, patients with BPD showed themselves to be capable of viewing others in a nuanced way, while the specific negative stimuli elicited dichotomous thinking. In the case of the nonspecific stimuli, not BPD, but the severity of Axis II pathology was the essential variable relating to dichotomous thinking. But, in the case of the specific positive stimuli (the good roles), the effect failed to reach significance. Third, the hypothesis that unidimensional good–bad thinking is particularly strong in BPD was not supported. Patients with BPD did not show stronger unidimensional good–bad thinking (splitting) than the other groups for five of the six roles. Only in the case of the perpetrator role did the patients with BPD show more unidimensional good–bad thinking than both other groups. Direct comparison of dichotomous thinking scores and unidimensional good–bad thinking scores demonstrated that dichotomous thinking could not result from unidimensional good–bad thinking, even in the case of the perpetrator role. Thus, the hypothesis that extreme evaluations of borderline patients are unidimensional (''all good'' vs. ''all bad'') could not be supported, even in the case of the perpetrator role, a role that borderline patients seem to be hypersensitive to. In BPD, dichotomous thinking seems therefore to be multidimensional. Fourth, the BPD group and the Cluster-C group, compared with the normal group, report a strong emotional response to the specific clips, but dichotomous thinking is found only for the BPD group. This finding indicates that a strong emotional response is not necessarily associated with dichotomous thinking. This can also be concluded from the moderate correlations between the strength of the specific emotions and the extremity of the evaluations. An exception is the correlation between the valence scores and dichotomous thinking in the case of the victim and the good roles. Although dichotomous thinking does not seem to be related to specific emotions, it may sometimes relate to a global emotional evaluation (valence). Low correlations between dichotomous thinking and specific emotions could be the result of difficulties that borderline patients may have in labeling specific emotions. Fifth, it is unlikely that depression or childhood traumas explain the results. BPD appeared to be the essential variable.

Several issues regarding the present study should be noted. First, only negative and neutral film scripts were used. Although the film clips included personalities with a good role, they were placed in a negative context. The specific and nonspecific clips triggered a negative emotional response overall, so no statements can be made

about interpersonal judgments of borderline patients in response to positive stimuli in a positive context. The same holds for the issue of whether a distinction can be made between specific and nonspecific positive stimuli. Second, the nonspecific clip, although hypothesized to be emotional, did not evoke a strong emotional response. An additional weakness of the study was that only one nonspecific emotional clip was presented, so no comparison was possible between nonspecific emotional clips. Further research is needed to test the specificity hypothesis of dichotomous thinking in BPD. Third, dichotomous thinking, as such, does not exclude multidimensional thinking, because the extreme evaluations of borderline subjects had different valences on the positive–negative dimension. What should be considered, however, is that subjects were, in a certain way, stimulated to think multidimensionally, because they were asked to judge the film personalities on several character qualities. The results show that borderline subjects are able to make mixed positive and negative evaluations of one person, which indicates that they do not see the film personalities as ''all good'' or ''all bad'' *when they are instructed* to make evaluations on various dimensions. Other methods may show different results. Fourth, it was not possible to plan exact sample sizes in advance, within the time span of the study. Therefore, film clips could not be balanced across the study, which may have resulted in carryover or order effects. The results, however, did not show a transfer of effects, because no dichotomous thinking was found for the neutral film clip. Fifth, it could be argued that the presentation of film clips does not lead to sufficient ego-threat to provoke splitting as a defense mechanism. It should be noted, however, that the specific film clips were highly emotional for the patients. Even if splitting could be demonstrated with higher levels of ego-threat, the present findings suggest that object representations are not divided, on a structural basis, into ''all good'' vs. ''all bad.'' Last, it remains to be demonstrated that dichotomous thinking on the ''BPD-specific'' interpersonal areas is restricted to BPD. Research with other psychopathology control groups is needed to clarify this.

The direct test of whether the observed dichotomous thinking by patients with BPD results from unidimensional good–bad thinking (splitting) deserves some comments. This test was done by comparing the mean dichotomous thinking score ($\Sigma|\mathrm{VAS}_i|/16$) with the mean unidimensional good–bad thinking score ($|\Sigma\mathrm{VAS}_i|/16$) within the BPD group. A mathematical proposition (Schwartz's proposition) states that $\Sigma|x_i| \geq |\Sigma x_i|$, which implies that the mean dichotomous thinking score ($\Sigma|\mathrm{VAS}_i|/16$) can never be larger than the mean unidimensional good–bad thinking score ($|\Sigma\mathrm{VAS}_i|/16$). If, and only if, all signs (i.e., the valences) of $x_i$ (i.e., $\mathrm{VAS}_i$) are equal, then $\Sigma|x_i| = |\Sigma x_i|$ (i.e., $\Sigma|\mathrm{VAS}_i|/16 = |\Sigma\mathrm{VAS}_i|/16$). Note that this is exactly what theories predicting splitting imply: All evaluations should be either good or bad. Nevertheless, the fact that the dichotomous thinking score can be smaller, but never larger, than the unidimensional good–bad thinking score suggests that our test was biased in favor of the multidimensionality hypothesis. It is conceivable, for instance, that by mistake a patient rates a personality characteristic at the good pole despite engaging in all bad thinking. There are, however, three reasons why this does not seem to be a serious threat to the interpretation of the present results that dichotomous thinking is more characteristic of BPD than is unidimensional good–bad thinking. First, a between-group comparison revealed that the patients with BPD

did not differ significantly from the control groups in unidimensional thinking, with the exception of the perpetrator role. This test did not compare unidimensional scores with dichotomous scores and therefore cannot be criticized on this ground. Second, the dichotomous thinking score was *much* higher than the unidimensional good–bad thinking score (see Fig. 3), a result highly unlikely if splitting would have taken place but some patients made a random mistake on one of the VASs. Third, we tested the hypothesis with a statistical test (a paired *t* test), thus allowing deviation from both scores' being exactly equal, caused by measurement errors. These *t* tests were highly significant, which also indicates that it is unlikely that all good–all bad thinking underlies the present results.

The finding that multidimensional dichotomous thinking, and not unidimensional good–bad thinking, is characteristic of patients with BPD is consistent with theories emphasizing that the developmental phase of 6 to 12 years is essential in the development of BPD pathology (e.g., Arntz, 1994; Weaver & Clum, 1993). Splitting is assumed to be characteristic of pathology of much earlier origin. Other findings also indicate that characteristic object representations indices in patients with BPD suggest later pathology (Nigg et al., 1992; Segal et al., 1992, 1993; Westen, 1990, 1991a, 1991b; Westen, Lohr, et al., 1990; Westen Ludolph, Block, et al., 1990; Westen Ludolph, Lerner, et al., 1990; Westen, Ludolph, Silk, et al., 1990). This study suggests that object representations of borderline patients are not divided on a structural basis into ''all good'' or ''all bad.'' If so, one may wonder why clinicians seem to see splitting so often. Given the sudden switches and extreme evaluations that patients with BPD express toward the therapist (often the therapist is the object of their evaluations), therapists might overgeneralize these evaluations, and think that the patient changes from viewing them as ''all good'' to ''all bad,'' whereas in fact the patients make extreme evaluations on a limited number of therapist qualities. The strong emotions this probably evokes in the therapist (fear, anger) might contribute to the therapist's inferring that splitting is taking place. In addition, it is conceivable that the spontaneous communication of borderline patients is unidimensional, because of difficulties borderline patients may have in integrating extreme multidimensional evaluations into one coherent final evaluation that they can communicate to others (see earlier mentioned work of Harter & Buddin). They may therefore restrict themselves to a limited number of categories of the same valence (''all positive'' or ''all negative'') to communicate. Last, only in the case of (perceived) perpetrators may patients with BPD tend to become relatively unidimensional. Viewing the therapist as a (potential) perpetrator will probably play a role in transference in therapy.

The absence of a clear relationship between dichotomous thinking and childhood traumas, even in the case of the perpetrator role, is striking. This finding suggests that although childhood traumas may play a role in the development of BPD, they do not directly cause dichotomous thinking. One interpretation is that only when traumas are processed in a specific way, later dichotomous thinking and borderline pathology result. The results should be interpreted with some caution, however, because the assessment of childhood trauma (by means of the opening question of the PTSD section of the SCID-I) may have led to an underestimation. For instance, in previous studies we found higher proportions of childhood abuse

in patients with BPD (sexual abuse in 70% to 80% of the patients; Arntz, 1999; Arntz et al., 1999). Clearly, more research is indicated here.

The patients with BPD appeared to show more dichotomous thinking in the case of the victim, perpetrator, and ambivalent roles than in the case of the good (the helper) roles. This finding suggests that positive roles elicit less extreme evaluations than those elicited by specific negative roles (although good roles should be further studied in positive contexts). Previous research suggested that patients with BPD tend to see others as malevolent. If patients with BPD were characterized only by a ''malevolence schema,'' we would not expect these patients to evaluate the victim and especially the ambivalent roles so extremely. This suggests that in addition to the tendency to view others as malevolent, abandonment and being a victim are elements of the basic schemata of such patients. Apparently, ambiguous interpersonal situations involving intimate relationship difficulties with ambivalent actors also elicit dichotomous thinking.

In conclusion, taking into account the limitations of the present study, the results indicate that borderline patients make extreme evaluations of other persons in situations that are specifically emotional for them, such as sexual abuse, rejection, and so forth. These extreme evaluations are mostly not ''all good'' or ''all bad'' but both: good and bad. Further research is needed regarding the conditions necessary for dichotomous thinking to occur, such as specific (schema-related) vs. nonspecific stimuli and the positive vs. negative stimuli. Further research is also needed on the content of the spontaneous evaluations of borderline patients, and to unravel the relationship with childhood traumas.

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